(54) Title: SYSTEM AND METHOD FOR PROVIDING INDIVIDUALIZED TARGETED ELECTRONIC ADVERTISING OVER A DIGITAL BROADCAST MEDIUM
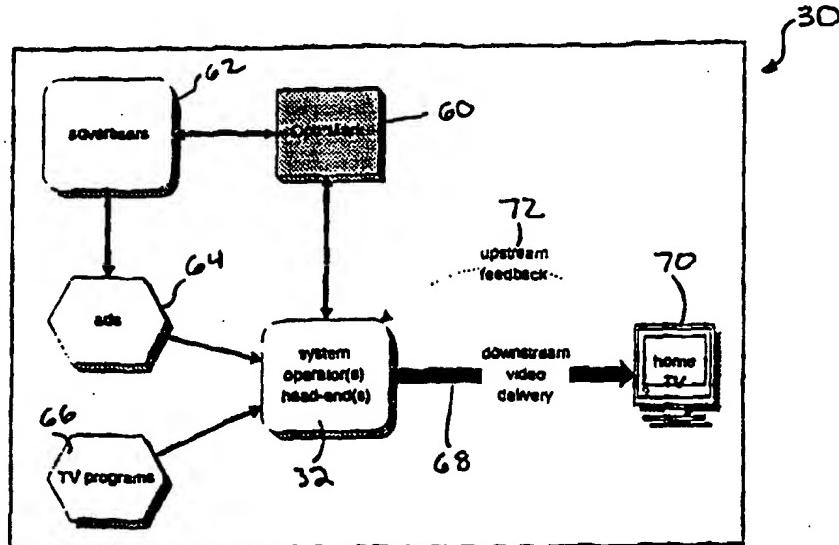
(57) Abstract

The invention provides a system and method for indiviualized household (120) and viewer (122) targeted advertising over adigital communications medium, such as digital television, which achieves both short term targeted advertising goals as well as long term targeted advertising goals.

SYSTEM AND METHOD FOR PROVIDING INDIVIDUALIZED TARGETED ELECTRONIC ADVERTISING OVER A DIGITAL BROADCAST MEDIUM

Background of the Invention

This invention relates generally to a system and method for providing optimized

5　　electronic marketing and in particular to a system and method for providing user specific

advertising over a conventional digital broadcast medium, such as a digital television.

Traditional broadcast television is a single origination point to a plurality of

destination points system in which the same television signal is broadcast to each person

viewing a particular station. Thus, each person viewing a particular channel will

10　　necessarily view the same programming content as well as the same advertisements

embedded in the programming content. For most broadcast medium industries, such as

television, advertising revenues may be the sole source of revenues for the television

broadcaster. In a conventional television broadcast system, many advertisers compete for

the opportunity to place their advertisement in the advertisement breaks between the

15　　programming content. In addition, once a particular advertising break has been filled with

an advertisement, the television broadcaster can no longer sell that space in the broadcast

stream. Because the advertisements on a particular channel are seen by every viewer tuned

to the particular channel in a conventional television system, the advertisements in a

conventional television broadcast system cannot be targeted to a particular portion of the

20　　audience or even to a particular individual. Therefore, the television broadcast operator

may only derive a limited predetermined amount of advertising revenue from any

particular advertisement spot and it is desirable to provide the broadcaster with a system

for increasing the advertisement revenues that may be generated.

The problem with advertisements on a conventional television broadcasting system

for the advertiser is that each advertiser is interested in reaching only one or more subsets

5   of the total viewing audience because not all members of the viewing audience may be

desirable candidates for receiving a particular advertisement. For example, an

advertisement about a product for male hair growth would typically be directed to males

because males are more likely to purchase the product. The proportion of the audience

which is thought to be genuinely interested in the advertisement (or believed by the

10   advertiser to be a prime candidate to purchase their product) varies by product category,

but normally ranges from 20 - 40 %. Therefore, the advertisement viewed by the other 60

- 80 % of the audience, which are not prime candidates, represents a large amount of

wasted spending by the advertiser. Therefore, it is desirable to provide a system which

permits an advertiser to more carefully direct advertisements to a particular set of people

15   or even to an individual person so that the advertiser does not waste large sums of money

on parts of the audience which do not have any interest in their product. Thus, both

television broadcasters and advertisers desire a better way in which to provide

advertisements to the audience in a more targeted manner.

The emerging digital television media, in various forms such as digital cable, direct

20   broadcast satellite and wireless cable, provide opportunities for advertisers to better target

their advertising messages and provide more opportunities for broadcasters to generate

more advertising revenues for a number of reasons. With digital television media, the total viewing audience may be divided into many subgroups based on common interests or common demographic descriptors. Advertising targeting is also possible with digital television media due to an expansion in the bandwidth capacity of the broadcast from 8 -

5   100 channels in typical analog television to 200 or more channels in digital. The additional transmission capacity in combination with a limited amount of viable new programming content to use the entire new capacity permits portions of the added capacity to be used to deliver multiple advertising messages during the same time slot available for advertising. In addition, targeting of the advertisement is further enabled by the capability

10   of a digital set top box to serve as a store and forward node in a network so that individual household data about viewing preferences and the like may be captured, stored, uploaded to the broadcaster and used to improve the targeting of the advertising messages.

To more directly target advertisements to a particular portion of the total audience, the audience may be broken down into subgroups, in real time, based on one or more

15   factors or a combination of the factors. These factors may include shared demographics, such as gender, age or household income levels, shared preferences and tendencies to purchase certain product categories, such as foreign versus domestic automobiles, vacation travel, and many other factors. There are a number of conventional systems which attempt to target advertisements to a particular portion of the total audience based on one

20   or more factors.

In the future, the improved targeting will permit specific advertisement to be delivered to individual households. However, currently, bandwidth limitations do not permit targeting to individual households so that the audience may be divided into subgroups based on geographic or demographic indexes available from various third party

5   databases. There are some systems which use a set-top box in a household to control the advertisements which are seen by a particular household based on various information. None of the conventional systems permit individualized targeted advertising over a digital broadcast medium.

10   For the advertising industry, previous targeting systems, as described above, are limited in their ability to direct specific messages to specific people, and instead must stop short of this by directing messages only to specific households, without knowledge of which people are in the room to receive the messages. For viewers in advanced digital broadcast systems, there are both benefits and drawbacks to the fact that many more

15   channel choices exist. The benefits are obvious, but the drawbacks relate to the difficulty in finding the most preferred program to view at a particular time. In a typical digital broadcast system, there are over 3000 programs to choose from on any given day. Electronic Program Guides ("EPGs", also called "Navigators") have been developed in order to ease the search process, but these are limited to listing only about ten program

20   titles per page, and therefore a viewer would have to look at 300 screens of information in order to know all of the choices for a given day, and still would only know titles, and

would have to delve deeper into the EPG in order to read capsule descriptions of programs whose titles seemed interesting.

The advertising industry's existing preferred approach to determining the viewer

5   composition (as opposed to household audience) of a particular program is called the

Peoplemeter. In this method, a sample of a few thousand (in some implementations, a few

hundred) households are each paid several hundred dollars per year to push buttons on

handheld devices to indicate which viewers are in the room during all their viewing for

one to five years. Since this task is boring, offers no immediate reward (e.g., the cash is

10   received monthly such that the benefit is deferred), and there is no effective way for the

research company to check up on the conscientiousness of the button pushing, studies

indicate that compliance is only partial. In addition, most homes approached to participate

refuse to do so despite the cash payments. As a result, the data is flawed by sampling

error, response error, and nonresponse error, yet is continued to be used in the absence of

15   anything better.

Therefore, it is desirable to provide a system and method for individualized

targeted advertisement over a digital broadcast medium, and it is to this end that the

present invention is directed.

Summary of the Invention

20   The invention provides a system and method for individualized targeted

advertising over a digital communications medium, such as digital television, which

achieves both short term targeted advertising goals as well as long term targeted advertising goals. For the short term, the invention may 1) provide a method to divide one or more audience subgroups in real time, at any commercial break; 2) determine which advertisements should be optimally sent to each subgroup in the audience; and 3) switch

5   the audience subgroups to channels which are specifically reserved for use to deliver a particular stream of advertising messages. In the long term, the invention also provides a method for determining or inferring which specific individuals are viewing the programming content and the advertisements so that each advertisement may be targeted to a finer degree of granularity (e.g., an individual in a household who watches the

10   television from 9 to 11 P.M.).

In accordance with one aspect of the invention, the targeted advertisement system may include a system and method for coding the advertisements based on a variety of factors, a system and method for providing a user interface to the audience which may also gather information about the audience and individuals in the audience and generate a

15   customized menu based on the gathered information, a system and method for matching the advertisements in multiple advertisement streams to a particular audience or viewer and a system and method for gathering user feedback to the programming content and the advertisements.

Brief Description of the Drawings

20   Figure 1 is a block diagram illustrating an example of a digital broadcast system that may include a targeted advertising system in accordance with the invention;

Figure 2 is a block diagram illustrating a targeted advertising system in accordance

with the invention;

Figure 3 is a block diagram illustrating a flow of data in the targeted advertising

system of Figure 2;

5 Figure 4 is a block diagram illustrating more details of the targeted advertising

server shown in Figure 2;

Figure 5 is a block diagram illustrating the architecture of the feeder channel

system in accordance with the invention;

Figure 6 illustrates an example of a first embodiment of the switching instructions

10 that may be used in the feeder channel system of Figure 5;

Figure 7 illustrates an example of a second embodiment of the switching

instructions that may be used in the feeder channel system of Figure 5;

Figure 8 illustrates an example of a third embodiment of the switching instructions

that may be used in the feeder channel system of Figure 5;

15 Figure 9 illustrates an example of an ad plan in accordance with the invention; and

Figures 10A - 10E illustrate an example of the playbill in accordance with the

invention based on the ad plan of Figure 9; and

Figure 11 is flowchart of a custom menu method in accordance with the invention.

20 Detailed Description of a Preferred Embodiment

The invention is particularly applicable to a system and method for individualized

targeted advertising over a terrestrial cable based digital television system and it is in this

context that the invention will be described. It will be appreciated, however, that the system and method in accordance with the invention has greater utility and may be used for individualized targeted advertising over other types of digital communications media, such as satellite-based digital systems, digital wireless systems and the like. To better

5   understand the invention, a typical digital broadcast system will now be described prior to describing the invention.

Figure 1 is a block diagram illustrating an example of a digital broadcast system 30 that may include a targeted advertising system in accordance with the invention. The

10   digital broadcast system 30 may include a digital head-end 32, which generates and transmits digital data, and a plurality of households 34 which receive the digital data from the digital head-end via a communications systems 36, such as a terrestrial cable system. The digital head-end 32 may receive programming content 38 and advertisements 40 and may generate a digital datastream 42 which is fed through the communications system 36.

15   The digital head-end 32 may also receive user feedback data 48 from the plurality of households 34 which may be used to customize the advertisements being provided to each household. Therefore, based on the programming content 38, the advertisements 40 and the feedback data 48, the digital datastream 42 contains various digital data which is then transmitted to each household 50.

20   Each household 50 may include a set-top box 52 which receives the digital datastream from the communications system 36. The set-top box 52 may be connected to a television 54 on which the programming content and the advertisements are viewed by

the people within the household. In a typical digital broadcast system, there may be some

mechanism for customizing the digital datastream for each household so that the

advertisements actually viewed by each household are different. Thus, using a typical

digital broadcast system, some limited degree of the targeted advertising may be provided

5　　in that advertisements may be targeted to a particular household. In accordance with the

invention, on the other hand, the advertisements in the digital datastream may be targeted

to a particular individual in a household as will now be described.

Figure 2 is a block diagram illustrating an example of a digital broadcast system 30

10　　that includes a targeted advertising system 60 in accordance with the invention. As

shown, the targeted advertising system 60 may communicate with the digital head-end 32

as described below. The targeted advertising system 60 may determine, based on various

information described below, which advertisements in the digital datastream from the

digital head-end are targeted to which individual viewers in accordance with the invention.

15　　To target the advertisements, the targeted advertising system 60 may communicate with a

plurality of advertisers 62. An advertiser 62 may communicate a desired audience for a

particular advertisement to the targeted advertising system 60 and may receive information

and data from the targeted advertising system 60 about the actual audience of the particular

advertisement. The advertiser 62 may generate a new advertisement 64 which is sent to

20　　the digital head-end 32 run by a system operator. The system operator may combine the

received advertisement with programming content 66, such as television programs, to

generate a digital datastream 68. The targeted advertising system 60 may also insert

information into the digital datastream relating to the targeting of a particular

advertisement as described below. The digital datastream 68 may be downloaded to a

television 70 within a particular household. Although only a single television within a

single household is shown, the invention is not limited to a single household or a single

5   television. To provide the targeted advertising system 60 with some of the data necessary

to properly target a particular advertisement, each household may generate feedback data

72 which is communicated back to the digital head-end 32 by any conventional

communications system, such as a terrestrial telephone line. The feedback data from the

household may include, for example, information about the viewing habits of each

10   individual in the household, the advertisements actually watched by each individual and

other information that may be used to target advertisements.

The targeted advertising system 60 may optimize the use of digital media as a

marketing tool by integrating advertiser's specified audience requirements with actual data

15   on audiences and their responses to the advertisements. For example, an advertiser may

specify that he/she wants to reach new automobile buyers and the targeted advertising

system may direct advertisements relating to new automobiles to individuals who, due to

the their viewing habits or indicated preferences, are potential new automobile buyers.

The targeted advertising system may provide several different levels of service as defined

20   by the Addressable Advertising Coalition (AAC). These levels of service may include: 1)

measurability-driver insertion in which the same advertising spot is sent to every

household viewing the programming content, but the advertising spot is inserted based on

the demographics of the audience of the particular programming content (Level 1); 2)

zone targeting in which different advertising spots may be sent to different zones within a

cable system and each household in a particular zone, viewing the same programming

content at the same time views the same advertising spot while a household in a different

5   zone a few miles away may view a different advertising spot (Level 2); 3) neighborhood

targeting in which different advertising spots may be sent to each "zip+4" zip code (each

"zip+4" number may contain five to fifteen households) (Level 3); 4) household targeting

in which different advertising spots may be sent to different households (Level 4); and 5)

people targeting in which different advertisements may be sent to different individuals

10   within a household (Level 5).

The targeted advertising system 60 may be integrated into a variety of different

digital broadcast systems including systems providing high bandwidth and two-way

communication to individual households, such as digital television, because these system

15   support near video-on-demand and/or true video-on-demand, on-line transactions and on-

line feedback. The targeted advertising system may also be integrated into systems

providing addressability to households and feedback from viewers, pay per view systems

where the viewer's programming content purchases provide feedback to the future

advertising plan generation, and cable modem systems where Internet access combined

20   with television provide additional delivery, targeting and feedback mechanisms.

The targeted advertising system may provide a number of different functions which permit targeted advertising. For example, the system may provide an interface to allow advertisers to specify targeting criteria for each advertisement and may facilitate the ability of an advertiser to buy advertisement space, including national advertisement campaigns

5   over a local digital system. The targeted advertising system may also generate an ad plan that ranks the combination of the advertisement spots and programming content based on how well the audience of the programming content match the target criteria of the advertiser. An advertisement playbill may also be generated by the targeted advertising system which indicates an actual proposed schedule for playing advertisements. The

10 targeted advertising system may also generate data reports about the targeted advertising. To facilitate feedback, the targeted advertising system may accept and analyze viewer feedback in order to optimize the targeting of the advertisements and produce the reports. To use additional information for the targeted advertising, the system may be connected to external marketing databases.

15

In more detail, the targeted advertising system may propose the ad plan to an advertiser which may be broken down into a channel advertisement plan, a piece of programming content ad plan or a portion of the day advertising plan. Based on this proposed advertisement playbill, the system operator or the advertiser may generate the

20 actual advertisement plan. The ad plan may be used when the particular digital communications system cannot automatically accept instructions from the targeted advertising system. In other situations, the system may propose a playbill incorporating

the advertisement and the programming content when the targeted advertising system and the digital communications system are coupled together. For highly dynamic digital communications systems, such as a video on demand system, the targeted advertising system may propose an ad plan to the advertiser and upon approval, automatically

5   generate a playbill based on the advertisement plan.

In summary, the targeted advertising system enhances the ability of an advertiser to effectively advertise using a digital communications system, such as digital television. The system may propose schedules for advertisements based on various information so

10   that the advertiser reaches more of the audience which he/she would like to reach. In a preferred embodiment, the targeted advertising system may be used with a digital broadcast system which supports video programs and services being delivered to subsets of the households connected to the digital broadcast system and supports feedback from individual households. However, the targeted advertising system may also operate in the

15   absence of these capabilities because the system may still improve advertisement plans. For example, when feedback from individual households is not available, the system may use various household statistics in order to suggest an advertising plan. Now, the flow of data in connection with the targeted advertising system in accordance with the invention will be described.

20

Figure 3 is a block diagram illustrating a flow of data in the targeted advertising system 60 of Figure 2. The targeted advertising system 60 may include a server 100 which

processes various data in order to generate targeted advertising information, such as the

advertisement is going to be inserted for each household and when the advertisement is

going to be inserted for each household. The server 100 may receive data from a

marketing database 102, a viewer profile database 104, an audience database 106, a

5   programming content database 108 and a program schedule database 110. To receive

various data from the advertiser, as described in more detail below, the server may include

a dashboard application 112. The server 100, which is executing various software

applications, may generate and output targeted advertising information to a trafficking

system 114 which passes the information on to a point of insertion 116 which in turn

10   passes the information on to an individual system operator 118. The individual system

operator may then pass a portion of the information on to a household 120 and ultimately

the viewer 122 who views the programming content with the targeted advertisement

selected by the targeted advertising system. Now, more details about each portion

described above will be provided.

15

The process of targeted advertising starts with an advertiser who has developed an

advertisement campaign to be distributed to consumers via, for example, television media.

As part of the development of the advertisement campaign, the advertiser generates

targeting criteria to identify those households or consumers that they are trying to reach

20   with the particular advertisement campaign. For a national advertiser, they desire to be

able to purchase advertisement space in multiple geographic areas and cities from a single

centralized source. In a typical system, the national advertiser must negotiate with each

system operator in each geographic area to accomplish this goal.

The dashboard application 112, which may be a client/server software application

5   being executed on the same computer as the server 100, may provide the advertiser with an

interface to the targeted advertising system 60. For example, using the dashboard

application 112, the advertiser may, for a particular advertisement campaign: 1) specify its

advertisement campaign and the associated advertisement spots; 2) specify the

demographics of the target audience for the advertisement campaign (e.g., age, sex,

10   income, etc..); 3) specify product related characteristics of the target audience for the

particular campaign (e.g., "buys Japanese cars" or "has requested a brochure"); 4) specify

schedule related constraints (e.g., start and stop dates of the campaign, budget, time

preference, programming content preference, excluded programming content, minimum

or maximum frequency of advertisement exposure and advertiser impact weights); 5)

15   generate reports describing the proposed advertisement plans; and 6) review, modify and

approve the proposed ad plan and playbill generated by the targeted advertising system 60.

The dashboard application 112 may permit the advertiser to implement an advertisement

campaign for a single digital broadcast system operator or for multiple system operators so

that a national advertiser may generate and implement all of its advertisement plans for all

20   geographic areas from a single central location.

The viewer profile database 104 permits the targeted advertising system to predict

how to find the advertiser's targeted audience. The information in the viewer profile

database may be compiled in various manners. For example, when a new subscriber signs

up for the digital broadcast service, a questionnaire may be filled out or a viewer may

5   maintain a profile on-line that is updated during television viewing. In addition, the

viewer profile information may also be generated by census level data captured from pay

per view billing records or census level data captured based on viewing of programming

content through the capture of a clickstream of viewer's requests to a set top box. The

clickstream may include, for example, the channels being tuned to by the viewer as well as

10   a viewer's responses to interactive advertisements and a viewer's response to branded

environments, such as games or shop-at-home networks. The viewer profile information

may include household and individual demographics, programming content preferences,

viewer responses to on-line offers, such as requesting a brochure, viewer responses to

opportunities to rate programming content and advertisements, such as an "applause" or

15   "boo" buttons on a remote control unit, a viewer's use of services beyond viewing (such

as, shop-at-home, games, Internet access, and custom menus, as described below), and

user maintained profiles of demographics and preferences.

The sample audience database 106 may contain additional secondary data used for

20   targeting advertising. In particular, for a digital broadcast system which does not support

direct data from the viewers about the viewer's preferences and the like as described

above, the targeted advertising system may use conventional audience samples which may

be stored in the sample audience database. Therefore, the targeted advertising system, in

accordance with the invention, may be used both with systems which support viewer

profile information and with older systems which do not. For the sample audience

database data, third party marketing databases, such as Nielsen or MRI, may be used. This

5   third party data may also be supplemented by additional information generated by the

digital broadcast system operators who support viewer profile data. The marketing

database 102 may contain information about specific product preferences beyond what

may be available from the viewer profile database or the sample audience database. The

marketing database may include scanner data from local retail stores, an advertiser's

10   customer database or an exhaustive industry database, such as the Polk database which

contains automobile ownership data by individual.

The programming content database 108 contains the programming content into

which the targeted advertising system inserts the advertisements which have been targeted

15   to a particular individual or audience. In particular, the system inserts a particular

advertisement into programming content that the targeted audience is likely to be viewing

based on the viewer profiles, sample audience data and the like. The programming content

may also store information about the programming content available for each digital

broadcast operator. The programming content data may include a description of a

20   particular piece of the programming content and a classification of the programming

content according to the values of the people to whom they appeal. The classification data

may be generated by the targeted advertising system and provided to the digital broadcast

system operators. The classifications may be assigned based on the descriptive material

provided by the programming content provider and the encoding of program values and

characteristics that may be conducted by media experts and consultants. The program

schedule database 110 contains information about the scheduling of the programming

5   content which permits the targeted advertising server 100 to place advertisements in

particular spots in the programming content.

The server 100 may include a plurality of client/server applications which

implement the targeted advertising based on the various databases as described above.

10   The server may maintain the various internal databases, may access different external

databases, such as marketing databases, as needed, may generate an ad plan and playbill

proposal, and may prepare data reports. For a targeted advertising system implemented on

a single digital broadcast system for a single system operator or a single cable channel,

there may be a single dashboard application 112 and a single server 100. As another

15   example, the targeted advertising system may link a plurality of different system operators

together in which each system operator may have its own dashboard application 112 which

communicates information between the central server 100 and the particular system

operator. The details of the ad plan and playbill will be described below with reference to

Figures 9A - 9F and 10A - 10E.

20

Once the server 100 has generated the ad plan and playbill, it may interface with

the trafficking system 114 of the digital broadcast system operators. The trafficking

system 114 is not actually part of the targeted advertising system and the actual trafficking

system depends on the digital broadcast system to which it is connected. For example, the

server 100 may export the ad plan or playbill as a paper report to be executed manually by

a clerk and then the success or failure of the ad plan may be fed back to the server 100. As

5   another example, the server 100 may electronically interface to the trafficking system

using, for example, the Electronic Data Interchange for National Cable Advertising

standard.

The point-of-insertion 116 is the location at which an actual advertisement is

10   inserted into a digital video stream which is being delivered to the households and

viewers. The insertion of the advertisement into the digital video stream is accomplished

by well known hardware and software systems. The point-of-insertion is different for

different systems. For example, a single operator may insert advertisements from a video

server that is part of the operator's head-end system, a regional interconnect may insert

15   advertisements for multiple cable channel operators in a single metropolitan region, a

single cable operator may insert advertisements on a national basis which is distributed to

various affiliates, or an metropolitan system operator (MSO) may insert advertisements on

a national basis.

20   The proposed advertisement playbill generated by the server 100 may be

eventually executed in order to actually insert advertisements into the programming

content datastream which is being delivered to each household or viewer. This is

accomplished by conventional delivery hardware and software systems at the head-end

operated by the system operators communicating with the set-top boxes in the homes of

individual subscribers. In order to fully implement the targeted advertising in accordance

with the invention, certain features of the head-end and the set-top box are needed. For

5   example, the set-top box must support feeder channels or a mass storage device, as

described below, when full interactive television is not supported. The set-top box must

be able to capture clickstream data and upload it to the head-end. Finally, the set-top box

must support viewer targeting , as opposed to conventional household targeting, which

requires the system operator to offer services that justify requesting information on which

10   individuals are currently viewing. An example of such a service is the custom menu in

accordance with the invention which will be described below.   Now, the server 100 will

be described in more detail.

      Figure 4 is a block diagram illustrating more details of the server 100 shown in

15   Figure 3. The server 100 may include a rule processor 130, a rules database 132, an ad

plan generator 134, a targeted advertising information database 136, an ad plan database

138, a playbill scheduler 140, and advertisement playbill database 142, a report generator

144 which generates reports 146. Each of the portions of the server will be described in

more detail below. Generally, the rule processor may use the rules from the rules database

20   to control the advertising plan generator which generates an ad plan based on the targeted

advertising information database and stores the ad plan in the ad plan database. The rule

processor may also control the playbill scheduler which, based on the ad plan and the

targeted advertising information, generates an advertisement playbill which is stored in the

advertisement playbill database. The report generator may generate a report based on the

targeted advertising information. The targeted advertising information in the database 136

may include the data as described above with reference to Figure 3, such as advertisement

5   campaign descriptions, targeting and scheduling data, audience profiles, sample audience

data, marketing data from external sources, programming content data, programming

content schedules and the schedule for available advertisement breaks within the

programming content.

10   The targeted advertising system in accordance with the invention may also include

an automatic reoptimization process in which an advertiser/agency specifies an "Objective

Function", such as nonswitchaway from an advertisement, or a positive "click on remote"

response to the advertisement, which the advertiser/agency wishes to maximize. The

system may measure the strength of this Objective Function as a percentage of viewers (or

15   target viewers) by program, program type (including emotive typologies), daypart, day of

week, network, pod position, etc. and automatically shifts the advertising schedule to

include more of the environments in which the Objective Function is highest. In addition,

for new advertisements which do not have any associated data about the Objective

Function, the system may generate a Media Impact Prediction. In particular, the system

20   may make a prediction based upon the confluence of certain emotive typologies (e.g., a

heart-warming program) as applied to programs, and based on those same emotive

typologies as applied to the advertisements themselves. For example, a heart-warming

advertisement may or may not have least switchaway (an Objective Function) in programs which are themselves heart-warming, etc. Now, the rule processor 130 and the rules database 132 will be described in more detail.

5   The combination of the rule processor with the rules database permit the server 100 to process various data based on a set of rules in order to automatically generate the ad plan and playbill. In accordance with the invention, complex targeting and scheduling criteria may be defined as deductive rules and constraint rules using a symbolic logic language. As a first example of these rules, let the 'adExcludeSeries' rule predicate

10   indicate an advertisement campaign and a programming series where it is desirable for the advertisements to be excluded from being scheduled during the episodes of the programming series. There are several reasons why such an exclusion could be desirable such as that the advertiser may have requested it be excluded or the subject of the programming series and the subject of the advertisement campaign are not compatible for

15   a variety of reasons defined in the data. This rule may be expressed, for example, in pseudocode as follows or in any other equivalent syntax.

The rule is that advertisements from any campaign "Cp" shall not be shown in episodes of any series "S" if:

20   1. There exists a subject "Subj" of series "S" which was explicitly excluded by the advertiser (by associating a null weight to this pair of campaign and subject):

adExcludeSeries(campaign: Cp,series: S) <- seriesSubj(series: S, subject:

Subj) and campaignSubject (campaign: Cp,subject: Subj, weight:0); or

2. The subjects of the campaign (adSubject) and of the series (seriesSubj) are not

compatible with each other.

5   adExcludeSeries(campaign: Cp, series: S) <- adSubject(campaign: Cp,

subject:Subj1) and seriesSubj(series: S, subject:Subj2) and not

compatible(subject1: Subj1, subject2: Subj2).

The result of this rule will be to prevent certain advertisements from being inserted into

certain programming content.

10

As another example of a rule used by the rule processor, assume that the

'newrating' rule predicate denotes special cases with new ratings in which the new ratings

take precedence over the standard rating process. The following rule will produce, from

an oldRating "OldRating" a lower new rating "NewRating" for any ad "A" about 'Florida'

15   to any person "P" not living in 'Florida':

newrating(person: P, ad: A, old: OldRating, new: NewRating)<-

isAbout(ad: A, subject: 'Florida') and not viewer(person: P, state:

'Florida')   and NewRating == OldRating / 2.

20   By combining various rules together, the targeted advertising rules processor

derives, from the current available data on the advertising and the like as described above,

a ranking of each advertisement per unit of schedule wherein the unit of schedule depends

on the AAC service level as described above being targeted.   Therefore, the ad plan

generator 134 as described below, may use this rule-based processor in order to determine

the order of the advertisements. Now, the ad plan generator 134 will be described.

5

The ad plan generator 134 using the results from the rule processor 140, ranks the

combination of the advertisement campaigns and the delivery conduit. The level of

granularity of the ranking depends on the level of service being targeted as set forth below

in Table 1. To rank each advertisement, the various targeting criteria provided by an

10   advertiser is compared to the program and a value indicating a likelihood of a match

between the advertisement and the program. For example, in a Service Level 5 system, an

advertisement may be directed toward 19-39 year olds and the program in a given

household may be being viewed by a 25-year old so that the advertisement should be

shown in that household at that time. Each of these values for each of the targeting criteria

15   is weighted and combined together to generate an overall match value which appears in the

generated ad plan.

AAC Service Level	Ranking	Data Support
1 - Measurement based insertion	Campaign by program	Average demographics of all viewers for each program
2 - zone targeting	Campaign by program by zone	Average demographics of viewers by zone for each program
3 - neighborhood targeting	Campaign by program by geographic cluster type	Average demographics of viewers by geographic cluster type for each program

4 - household targeting	Campaign by program by household type	Average demographics of viewers by household type for each program
5 - people targeting	Campaign by program by people-based demographic category	Average demographics of viewers by household type for each program

The advertisement playbill scheduler 140 uses the generated advertisement plan,

the program schedule and more specific information about the viewers to generate a

playbill. An example of a playbill is described below with reference to Figures 10A - 10E.

5   The playbill specifies what advertisements are going to be inserted into which

programming content and into which advertisement spots in the programming content.

The granularity of the playbill depends on the delivery system available to deliver

advertisements to the viewers as with the advertisement plan. The playbill may be a

proposal which may be implemented by an existing system or an actual advertisement

10   schedule that determines the advertisement insertion depending on the interface to the

system operators. Thus, the targeted advertising system may be interfaced into existing

systems which cannot themselves handle targeted advertising or may be installed with a

new system. The capabilities of the targeted advertising system depends somewhat on the

digital broadcast system into which it is installed. An example of the granularity of

15   several playbills, depending on the type of delivery system that is available, is set forth in

Table 2 below.

TABLE 2

Delivery Environment	Granularity
Single Delivery Stream	A single playbill for the entire system
Zone Delivery Stream	A separate playbill for each zone
Feeder Channel(s)	A single playbill for the system, but including auxiliary channel(s) that carry alternative advertisements

As set forth in Table 2, a single playbill may be generated for a delivery system

that broadcasts a single delivery stream to all viewers. For a digital broadcast system

5   which broadcasts different delivery streams to different audience zones, the targeted

advertising system may generate a separate playbill for each audience zone. Finally, for a

system with feeder channels in accordance with the invention as described below in more

detail, a single playbill may be generated for the entire system but there may be auxiliary

channels which carry auxiliary advertisements which may also be inserted into the

10   programming content in specific households based on a selection made by each set-top

box. An example of a playbill for a system with feeder channels is described with

reference to Figures 10A - 10E.

To accomplish the scheduling of the advertisements and the programming content,

15   the playbill scheduler 140 uses the ranking of the advertisements from the ad plan and

assigns the advertisements to the program channels and to any associated feeder channels.

In particular, the playbill scheduler may assign the feeder channels to the program

channels over short periods of time (e.g., an advertisement break or the duration of the

particular programming content) having above a predetermined level of forecast audience.

For each defined period of time, the playbill scheduler may use one or more targeting

criteria to partition the audience into different groups and then assign an advertisement to

each advertisement break using the ad plan ranking information and the forecasted

audience. To place the advertisements in various advertisement breaks, scheduling

5   constraints are followed which may include the advertisement campaign budget, a

minimum and maximum number of airings of the advertisement per program, placement

constraints within the programming content such as first and last advertisement break, and

competitive constraints such as avoiding close proximity to advertisements for competitive

brands. Now, the report generator will be described.

10

The report generator 144 may generate reports 146 which may include the

advertisement plan, the advertisement playbill, the audience reports, advertisement

effectiveness reports, and advertising optimization reports. The audience report indicates

the number of people who watched a particular advertisement while the advertisement

15   effectiveness report may indicate an effectiveness of an advertisement. As an example, an

advertisement for a pay-per-view event may be aired and the actual number of people who

ordered the pay-per-view event is correlated to the programming content in which or the

time when the advertisement was shown. For example, the viewing data may show that

20% of the people who saw the advertisement on "Ellen" ordered the event while only 2%

20   of the people who say the advertisement on a talk show did. The advertisement

optimization report may indicate to an advertiser that an advertisement should be moved to

a different program or to a different time based on the advertisement effectiveness report.

In order to target advertisements based on individual viewers, the targeted

advertising system may have to support ten of millions of viewers. This would be a very

difficult number of viewers to track and manage. From the advertiser's point of view,

5   there are actually relatively few distinguishable combinations of the targeting criteria

among the millions of viewers. Therefore, the advertiser may achieve the same level of

advertisement targeting by aggregating the viewers into viewer types instead of individual

viewers. These viewer types may be defined based on demographic categories, which may

number about 20, based on geographic clusters as defined by conventional

10   geodemographic database products (typically between 50 and 100), or based on product

preferences or propensity criteria. The product preference or propensity criteria may be

defined for each product of each advertiser and may include fewer than 25 different

groups. Therefore, the targeting system may use these viewer types (usually less than 300)

in order to achieve complete individualized targeted advertising in accordance with the

15   invention. These viewer type categories also permit the targeted advertising system in

accordance with the invention to be scaleable and support many users.

As described above, the digital broadcast system on which the targeted advertising

system is being used may include "applause" and "boo" buttons which provides the

20   opportunity for system operators and advertisers to know more about their viewers through

automatic feedback. Thus, the "boo" and "applause" buttons affect the custom menus as

described below in more detail.

In addition, in order to entice the viewer to use these buttons, the viewer must

believe that these buttons provide some advantage to the viewer. This advantage may be

to permit the viewer to somewhat control the system so that the viewer is shown future

5   programs and advertisements more pleasing to the viewer. The "applause" and "boo"

buttons allow viewers to indicate their reaction to the programming content and

advertisement being delivered to the viewer. These buttons also permit the system

operator and the advertiser to obtain information about a large number of its viewers. The

targeted advertising system may support these buttons in several different ways. For

10   example, the set-top box may store information generated when the viewer clicks either of

these buttons and correlate the information about the button to the programming content or

advertisements being viewed at the time the button was pressed. The set-top box may

upload the information to the head-end at some predetermined time interval. The targeted

advertising system may receive the applause/boo data from the head-end and update

15   viewer profiles based on the applause/boo data. The targeted advertising system may also

gather the applause/boo data into reports than may be provided to the programming

content providers, the system operators or the advertisers. In addition, the boo and

applause responses from the audience may be used to tune the Custom Menu as described

below in more detail or to select advertisements to send to the viewer. For example, an

20   advertiser may have several commercials and would be best served to not resend a

commercial that had already been booed by a viewer back to the same viewer, but rather

send one of the alternative commercials for the same brand. Now, the feeder channel

system in accordance with the invention will be described.

Figure 5 is a block diagram illustrating the architecture of a feeder channel system

5   160 in accordance with the invention. The feeder channel system 160 may include the

targeting system 100, the trafficking system 114, the digital head-end 118, the digital set-

top box 120, a data warehouse 162 and an Internet interface 164 which are interconnected

with each other. The trafficking system may further include a programming content

inventory 166, an advertisement inventory 168, a program schedule 170, and the

10   advertisement playbill 142 and may generate advertiser billing statements. The targeted

advertising system 100 may further include the report generator 144, an optimizer 172, and

an advertiser targeting criteria database 174 and may generate advertiser reports. The data

warehouse 162 may further include a subscriber database 176, household data 178 and

viewing data 180. The data warehouse 162 may receive its data from the digital head-end

15   118 and from telephone data capture. The Internet interface may include a web proxy

server 182 for secure communications and a local web server 184. The Internet interface

may communicate with the digital head-end 118 and permit people to access the digital

head-end from the Internet. The digital head-end may include a video server 186 for

programming content and advertisements, a video player 188, a set-top box configuration

20   database 190, a clickstream capture system 192 and an on-screen questionnaire processor

194. The digital head-end may be connected by a conventional distribution network, such

as a cable, to the set-top box 120. The set-top box 120 may include an identification

process 196, a feeder channel switcher 198, a clickstream capturer 200, a clickstream

uploader 202 and an on-screen questionnaire processor 204. The set-top box may

communicate with the digital head-end 118 over the distribution network and via a

telephone network 206 to a telephone data capture system 208 and to the data warehouse

5   162. Each of these portions of the feeder channel system 160 will now be described in

more detail.

The targeted advertising system is optimally used with a true video-on-demand

system which may individually target each household. However, the deployment

10   development of such systems will be slow. Therefore, the feeder channel system in

accordance with the invention permits the digital broadcast system to offer the advantages

of the optimal individual household addressable system. In particular, the feeder channel

system permits different households or viewers to receive different broadcast

advertisements while viewing the same broadcast programming content so that when an

15   advertisement break (advertisement slot) occurs in the programming content, different

households may view different advertisements. In accordance with the invention, this may

be accomplished by using a plurality of different broadcast channels to simultaneously

transmit different advertisements wherein all of the advertisements are aligned in time

with the advertisement breaks in the programming content. The set-top box may then

20   select from one of the advertisements in one of the feeder channels to insert into the

programming content.

The feeder channels are allocated to provide alternate advertisement choices which are all aligned with a particular advertisement break in the programming content. The combination of the various advertisements in the feeder channels provide a greater degree of targeting than conventional systems without the individual household targeting. In

5 accordance with the invention, a set-top box may switch between feeder channels in real-time to receive the most appropriate advertisement for that household according to the playbill information. To switch between the channels which are at different frequencies, the set-top box may retune itself to the new frequency. There are conventional set-top boxes which have the ability to retune themselves, but none do so for the purpose of

10 individual targeted advertising.

The feeder channel system improves the scheduling and targeted advertising in accordance with the invention in which the digital broadcast system operator may allocate some portion of the total distribution bandwidth to the feeder channels and some of the

15 program channels may be identified as feeder-channel-cooperating. In accordance with the invention, the advertisements may be assigned to the breaks in the programming content on the cooperating program channels and alternate advertisements are broadcasted at the same time over feeder channels so that the set-top box may choose to select the advertisement from the feeder channel instead of the standard advertisement. The targeted

20 advertising system may also assign advertiser preferences for each household/viewer or each viewer type for each advertisement break into which the alternate advertisement may be placed.

At the digital head-end, the system inserts advertisements, as specified by the playbill and advertisement plan, into the program channels and any alternate advertisements into the feeder channels. The digital head-end may then coordinate with

5   the set-top box to determine the preferred advertisement for each break either from the program channel or the feeder channels prior to the advertisement break as described below. When the break occurs, the set-top box may then automatically tune, in real time, to the feeder channel containing the preferred advertisement until the advertisement is completed and then tunes itself back to the original program channel. In accordance with

10   the invention, each set-top box may receive and store information from the digital head-end which may be used to automatically switch between feeder channels. If the latency introduced during the actual switching exceeds 100 milliseconds, the audio output is silenced and the video displays some meaningful picture such as the last frame of the previous show or advertisement.

15

The decision about the advertisement which is actually inserted into the programming content is made by the processor in the set-top box based on the information which is provided to it by the targeted advertising system. As described above, the viewers are categorized into viewer types and then the head-end may download a viewer

20   type assignment for each set-top box. As shown in Figure 5, this is also referred to as "Who Am I" data. Prior to each advertisement break where alternative advertisements are available on feeder channels, the digital head-end may attach a view type identification tag

onto each advertisement so that the set-top box may, in real time, select the appropriate

advertisement by matching its viewer type to the viewer type tags attached to each

advertisement. The set-top box may be assigned several different viewer types for

different people in the household and may thus select an advertisement from the feeder

5   channels by determining which viewer is currently viewing the television through the

custom menu feature as described below. The viewer types which are assigned to each

set-top box may be changed on a periodic basis or whenever some change occurs in a

household which dictates a change in the viewer type.

10   In summary, each portion of the feeder channel architecture as shown in Figure 5

may include the following functions and have the following new functionality. For

example, the targeted advertising system 100 may generate the advertisement playbill

from the targeting criteria, program inventory, program schedule and the household data.

The playbill may include the advertisement schedule from the program channels and the

15   feeder channels, if any, and household targeting instructions. The data warehouse 162

may manage the inventory of programming content, schedules, advertisements and

household data. The trafficking system 114 may control the airing of programming

content from a video server as with typical cable systems, but may also support the airing

of advertisement on the feeder channels which are time coordinated with the advertisement

20   breaks in the programming content. The digital head-end 118 may include new

functionality such as set-top box configuration to download data to the set-top box about

the feeder channels, clickstream capture and support for on-screen questionnaires. The

digital set-top box 120 may also include new functionality which may include: 1) an ability to remember household/viewer attributes that identify a household type ("Who Am I"); 2) a feeder channel switcher for switching between the advertisements on the feeder channels based on the household type information; 3) the ability to capture and store

5   clickstream data; 4) the ability to upload the clickstream data to the digital head-end; and 5) an on-screen questionnaire which permits viewers to maintain their own data and permits interactive advertisements. The onscreen questionnaire may also permit the user to click on products and services for which they are actively seeking information and this information may be used as part of the targeting algorithm in sending advertisements to

10   the user. Now, the technique for switching between the various feeder channels in accordance with the invention will be described.

A technique and mechanism for switching between one or more feeder channels in the set-top box will now be described. In accordance with the invention, each set-top box

15   in each household has data downloaded to it by the digital head-end which indicates which clusters that household belongs to for purposes for switching between the feeder channels. This is the "Who Am I" string. Once the cluster information has been downloaded to the set-top box, preceding an advertisement break in the programming content, the video stream entering the set-top box will contain broadcast information identifying, for each

20   feeder channel, the tuning instructions for the set-top boxes. In a preferred embodiment, this tuning data may be broadcast in the sideband of the MPEG signals.

For example, consider that there are five different set-top boxes with different "Who Am I" strings, such as W1, W2, W3, W4 and W5 and there are three feeder channels, such as F1, F2 and F3. In this example, the video stream entering the set-top box may be as shown in Figure 6. In this embodiment, each set-top box is assigned to a

5   cluster based on the targeting criteria by the targeted advertising system so that each household in a particular cluster views the same advertisements. As shown in Figure 6, a video stream 220 may include several channels, such as a embedded control channel 222, a first program channel 224, a first feeder channel 226, a second feeder channel 228 and a third feeder channel 230. In this particular example, there are two advertisement breaks so

10   that each channel in the video stream may be further broken down into a first program segment 232, a first advertisement break 234, a second program segment 236 and a second advertisement break 238. Prior to the first advertisement break, the embedded control channel 222 may contain data indicating that the first and second set-top boxes (W1 and W2) switch to the first feeder channel (F1) at the first advertisement break, the fourth set-

15   top box (W4) tunes to the second feeder channel (F2) and the fifth set-top box (W5) tune to the third feeder channel (F3) during the first advertisement break. In this example, since the third set-top box did not receive any switching instructions, it remains tuned to the original programming channel and the advertisements on the original programming channel will be shown during the first advertisement break. Prior to the actual

20   advertisement break, the feeder channels may be idle. Once the advertisement break occurs, each feeder channel may be broadcasting a separate advertisement (ad1, ad2 and ad3) which may then be tuned to by the appropriately instructed set-top boxes. For the

37

third set-top box, in this example, it stays tuned to the programming channel and displays ad0 to the viewer. After the first advertisement break, the programming content on the program channel continues.

5   Prior to the second advertisement break, the embedded control channel 222 again transmits data to each set-top box indicating any changes in the tuning instructions for each set-top box. Thus, in accordance with the invention, prior to each advertisement break, the tuning of a particular set-top box to a particular feeder channel may be changed. Thus, in this example, during the second advertisement break, the set-top boxes are not all

10   tuned into the same feeder channels as they were during the first advertising break.

The feeder channel architecture imposes a low data storage and coding load on the set-top box since the only data that must be stored in the set-top box is a "Who Am I" string. All of the switching instructions as well as the alternate advertisements are

15   received in real-time by the set-top box and the code necessary to process the switching instructions is minimal. The feeder architecture also imposes minimal load on the distribution network because each set-top box does not need to be individually addressed. As described above, a group of set-top boxes may be addressed as a cluster/household type and the switching instructions may be directed to different household types. In addition, a

20   single broadcast signal containing the switching instructions may be sent to all of the set-top boxes. Thus, in accordance with the invention, the amount of overhead required by the switching instructions is constant regardless of the number of set-top boxes connected to

the system. In addition, while the final decision about the advertisement insertion is made

at the set-top box, the head-end controls the insertion so that the set-top box is resilient to

timing problems or changes that may occur in real time.

5   The feeder channel architecture is a pull delivery method since the set-top box

pulls the appropriate advertisement from the feeder channel. Conversely, a conventional

television advertising system uses a push method in which all choices of advertisement are

made prior to delivery to the set-top boxes. Now, a second embodiment of the feeder

channel architecture will be described in which "fuzzy" clusters of households may be

10   targeted.

In a second embodiment of the feeder channel architecture, bitmaps representing

the targeting clusters may be used. In the bitmap string, as will be described with

reference to Figure 7 which shows an example of the video stream using the bitmap

15   strings, each bit of the bitmap represents a targeting criteria, such as an age bracket or an

income bracket. In this embodiment, the embedded control channel 222 contains a

bitmap for each channel. The set-top box may then compare the received bitmap for each

channel with the bitmap in its "Who Am I" string. The set-top box may then switch to a

feeder channel or stay with the program channel based on which received bitmap is closest

20   to the bitmap of the set-top box. In this second embodiment, the actual determination of

the advertisement being inserted is made at the set-top box based on the bitmap

comparisons. The bitmap also provides more focused advertisement targeting since each

bit of the bitmap represents a piece of targeting criteria as opposed to grouping households

into clusters. Thus, the head-end does not have to determine how to assign the set-top

boxes to the feeder channels and merely has to code each advertisement with the

appropriate targeting data so that the set-top box can choose the appropriate advertisement

5   on the appropriate feeder channel. In this embodiment, each bitmap may contain a

predetermined number of bits. As an example, each bitmap may contain 24 bits in which

five bits may be used for five different age brackets, three bits may be used for three

different income brackets and twenty-four bits for other targeting criteria. A total of 32

bits in the bitmap permits more than four billion different targeting clusters to be provided

10   as opposed to fifty clusters for a typical conventional system. An example of this

bitmapped switching instructions will now be described with reference to Figure 7.

Figure 7 illustrates an example of a second embodiment of the switching

instructions that may be used in the feeder channel system. The video stream 220 has the

15   same channels and portions as described above with reference to Figure 6. In this

embodiment, the embedded control channel 222 contains a bitmap for each channel in the

video stream and each bitmap has bits representing the various targeting criteria. As

above, the bitmap may be changed for each channel between advertisement breaks. As

above, prior to the first advertisement break 234, each set-top box compares its own

20   targeting criteria bitmap with the bitmaps for each channel to determine which channel,

and therefore which advertisement, the set-top box is tuned to for the advertisement break.

The feeder channel architecture may also contain additional information to provide further control over the set-top box. For example, the head-end may control the total number of times that a particular advertisement is viewed by a particular household. To accomplish this, some advertisements may have a unique identification number associated

5   with the advertisement and a maximum number of viewings of the advertisement over a predetermined time period such as a day, a week, a month or a longer period of time. The set-top box may maintain a view count for each advertisement that has an identification code and then restrict access to the advertisement when the maximum is exceeded until the time period expires. Rather than restricting access to the advertisements, the set-top box

10   may only choose those advertisements if no other advertisements are available. As other example, the "Who Am I" information may be further expanded to accommodate an increased granularity of the viewers. For example, an advertisement might be targeted to 18 - 39 year old women. Now, an example of two different program channels with aligned advertisement breaks sharing feeder channels will be described with reference to Figure 8.

15

Figure 8 illustrates an example of the video stream 200 for more than one program channel sharing feeder channels in accordance with the invention. In this example, the video stream 220 has similar channels and portions, but also includes a second embedded control 250 and a second program channel 252. In this example, there are two program

20   channels showing programming content and advertisement in which the advertisement breaks are aligned with each other so that the two program channels may share the feeder channels. To accomplish this sharing of the feeder channels, each advertisement in the

program channel and each advertisement of each feeder channel may have an associated

bitmap so that the set-top box may compare its stored bitmap to the bitmaps of the

advertisements to select the advertisement as described above. This process of sharing

feeder channels may be referred to as time slicing and feeder channels are associated with

5   a single program channel during a predetermined time slice and then associated with

another program channel during the next predetermined time slice. The predetermined

time slice may be the entire duration of a particular program, an hour, a half-hour or any

smaller predetermined period such as 10 minutes.

10   In order to provide more dynamic distribution of the feeder channels to the

program channels in accordance with the invention, a set-top box may have the ability to

simultaneously receive two channels so that two different channels are received. As one

channel is being displayed (i.e., the programming content), the set-top box may take the

advertisement from a feeder channel and store it in a memory in the set-top box. When the

15   advertisement break has been encountered, the advertisement stored on the hard disk may

be played back. Now, the channel switching in the set-top box necessary to implement to

feeder channels in accordance with the invention will be described.

When a channel switching information is received, such as meta-data embedded in

20   the MPEG video stream being viewed, the set-top box automatically switches to the

selected alternate feeder channel containing the advertisement. The channel switch will

not be noticeable by the viewer due to the short latency or the delay is covered up by a

freeze frame. Various different types of channel switching may be implemented as will now be described. The set-top box may use a switch-out to switch from a primary program channel to a target feeder channel. The target feeder channel may be determined prior to the switch by the set-top box based on the channel switching signals as described

5   above. The set-top box also stores the original program channel it came from so that it can return to the original program channel once the advertisement is completed. There may also be a switch to channel switch for switching between different feeder channels and a switch back to switch from a channel to another channel and then back to the original channel. Now, an example of an ad plan in accordance with the invention and a

10   corresponding playbill will be described.

Figure 9 illustrates an example of an ad plan for several different advertisement campaigns which may be used to generate the playbill shown in Figure 10. Although a short ad plan is shown in Figure 9 for illustration purposes, an ad plan will typically be

15   much larger since each advertisement campaign is ranked against each program. In this example, a representative sample of ad campaigns are ranked for two programs (i.e., Discovery News and World of Wonder). It should be noted, however, that a full ad plan would typically have a ranking of advertisements for each advertisement campaign for each program currently being displayed over the digital broadcast system so that the entire

20   ad plan would be enormous.

For each advertisement campaign, the program is listed underneath the advertisement campaign. For each program, a total value (TVAL) and an impressions value are calculated based on the advertiser's targeting criteria. In particular, the impressions value indicates the audience size who viewed the advertisement without

5   regard to the composition of the audience, such as the target audience density or media impact. The TVAL value, on the other hand, combines a target audience density value and a media impact value together. In particular, TVAL is a numeric value that rates how well an advertisement campaign will work with a particular program in terms of: 1) target audience as a percentage of the total audience size; and 2) the psychological enhancement

10   or detraction effect of the program environment on that particular advertising campaign per viewer exposure.

For example, the "Internet Phone" ad campaign may have a TVAL of 428 and an impressions value of 651 for the Discovery News program which indicates that the

15   Internet Phone ad campaign is likely to be shown during the Discovery News program. In contrast, for the "World of Wonder" program, the same Internet Phone advertisement campaign has a TVAL of 142 and an impression of 171 indicating that the advertising campaign is not compatible with the World of Wonder program (assuming equal cost of the advertisement campaigns). Thus, the ad plan shows the ranking of the various

20   advertisement campaigns for different programs so that the playbill may be generated. For each program, an advertisement campaign likelihood of being shown during that program may change. Using these rankings in the ad plan, the playbill may be generated. Now, an

example of a playbill generated based on the ad plan in accordance with the invention will be described.

Figures 10A-10E illustrate an example of a playbill in accordance with the invention for a particular time (11:00 p.m. on March 6, 1998) and a particular program

5   (Discovery News). As shown, the playbill lists data for each program channel (C1 in this example) and for each feeder channel (C-FC1, etc. . .)for each advertisement break. For example, for the first advertisement break, each program and feeder channel has one or more advertisements which may be placed into the first advertisement break based on the rankings from the ad plan. For example, the program channel may have a "Visa

10   Everywhere" advertisement which is 15 seconds long and expires on August 31, 1998. Thus, if a viewer is watching Discovery News at 11:00 p.m. during the first advertisement break and does not switch to another feeder channel, the viewer may watch the "Visa Everywhere" advertisement. Therefore, for each program during each time, the playbill will contain a list of the advertisements which may be inserted into each advertisement

15   break. The head-end may then actually insert the advertisements into the various channels. This example only shows a single program channel during a small time period and it should be noted that an actual playbill may be very large since it must contain the schedule of the advertisements for each program channel and for each feeder channel at each advertisement break in the programming. Now, the custom menu in accordance with the

20   invention will be described.

The custom menu may provide individualized targeting of advertisements where prior advertising targeting systems and methods determined targeting on a household basis. For example, once prior advertising targeting system requires that the viewer register their programming preferences and demographics via an onscreen questionnaire

5 through a registration process. The registration process, however, does not provide the advertiser or system operator with any indication of the individuals who are actually viewing specific programs at specific times the program. As described above, the conventional Peoplemeter method also is not satisfactory.

10 The custom menu and other features of the invention provides something better than the conventional Peoplemeter is several ways. The invention, in place of several hundred or several thousand sample homes as in the conventional Peoplemeter, can receive people viewing data from a virtual census of millions of homes in a digital broadcast system. In addition, since the people would not have to be paid hundreds of dollars per year per

15 home, the invention potentially saves the advertising industry millions of dollars per year. In addition, the viewers receive an immediate rather than a deferred benefit from compliance as described below. The invention also permits the people information to be received in time to help determine the best advertisement to target to that television set at that time, in order to reach the types of people and not just the types of households that the

20 advertiser is trying to reach.

The invention achieves these aims while making it easier and quicker for viewers to find programs to watch that they will enjoy. It works by means of viewers receiving Custom Menus (i.e., program recommendations that are immediately viewable and which reflect their previous viewing of specific types of programs ("types" reflecting the moods

5   and emotions evoked, actors/actresses, directors, etc. as well as conventional program format types), the degree to which they did or did not switch away during specific programs viewed, whether they pushed boo or applause buttons during specific programs viewed, and their stored requests for specific types of programs entered by means of onscreen questionnaires.

10

Viewers are therefore incentivized to request Custom Menus often in that they are told that the more often they do so, always doing so by means of pushing buttons to indicate which persons are in the room pleased by the program selections (this presence-in-room by individual data is the same information sought by prior Peoplemetors), and the

15   more that they use the boo and applause buttons to tell the system which proposed programs on the Custom Menu were appropriate and which were not, the better and quicker the system will learn to recommend programs that increase their viewing pleasure. The Custom Menu system will tend to take less time and produce more satisfying viewing choices than the usual cursory search of an EPG or printed TV program listing, and will

20   tend to be a less boring process. There is also a curiosity factor, to see what the artificial intelligence "thinks" will be the right programs for them at that time. Therefore viewers to some degree will take advantage of these benefits and by so doing will in effect become a

massive Peoplemeter panel for the advertising industry, without having to be paid

hundreds of dollars per year per home for a task which offers no immediate gratification

and cannot be adequately policed for accuracy of individual compliance.

5   Because viewers will not use the Custom Menu 100% of the time, the invention also

provides for the following methods of improving the accuracy of its estimates of who is in

the room with a specific television set that is playing at a specific time if the custom menu

feature is not being used. For example, people have different channel switching behaviors.

For example, in general, studies show that males switch channels more frequently than

10   females. Also, some people switch back and forth to watch two programs at the same time,

some people switch channels in ascending or descending order, etc. Therefore, the

invention provides for the recognition of these channel switching patterns correlated with

the "presence in-room" reports received through the Custom Menu, such that there is a

basis for estimating who is switching channels and therefore present in the room when the

15   Custom Menu is not used.

As another example, previous viewing during a program or time period could be

used to stand in for current information when Custom Menu not used. As another

example, data from syndicated audience measurement sources could also be used in

20   households where the Custom Menu is never used or coincidental telephone interviews

could be used to call households randomly to determine their viewer composition to

specific programs at specific times. This information could be compared with the viewing

estimates made by the foregoing means in order to calibrate the estimating equations such that the estimating accuracy is maximized against the coincidental validator.

The Custom Menu and other features of the invention, thus provide the advertisers and systems operators with an indication of the actual individuals watching each particular

5   program so that individualized targeting of advertisements is possible.   Thus, the Custom Menu Peoplemeter provides the Custom Menu and, more importantly, information about, for a given time period, the composition of individuals in the room, for the purpose of targeting the advertisements to them. This differs from the typical registration process in that it is the combination of previous clickstream data (e.g., "boo" and applause"

10   responses) plus onscreen questionnaire registration information which drives the Custom Menu. In addition, it is the current user request for a particular Custom Menu, specifying which viewers are in the room to be served by the latter Custom Menu, which provides the insight into current room composition that drives the advertisement targeting system down to the viewer level.   The custom menu may be implemented as a method as will now be

15   described with reference to Figure 11.

Figure 11 is a flowchart illustrating a Custom Menu method 300 in accordance with the invention. As shown in Figure 11, the method begins at step 302 in which each set-top box in each household may maintain viewing history information for the particular

20   household and then the viewer history information may be uploaded to the targeted advertising system for storage and analysis. To prevent the build-up of large amounts of viewer history information, the targeted advertising system may periodically (e.g., once a

week) process the viewer history information and keep only the conclusions of the

processing. Next, in step 304, the targeted advertising system may determine, based on

the viewer history information, a custom menu of future programs and advertisements

which may be of interest to a particular viewer in a particular household. For each viewer

5   in a household, as determined based on the viewer history information collected by the set-

top box, a separate Custom Menu of future programs is generated in step 306 so that the

programs and advertisements are targeted to each individual viewer or a group of viewers

instead of to the entire household. Each Custom Menu may be downloaded to the set-top

box.

10   In step 308, the set-top box may determine whether the particular viewer at a

particular time has been identified. For example, the set-top box may provide an initial

start-up menu which requests the name of the current viewer of the television. If the

identity of the viewer is known to the set-top box, the set-top box may select the

appropriate custom menu for the particular user or user group and that Custom Menu may

15   be displayed on the television controlled by the set-top box in step 310. If the user is not

known, then in step 312, the set-top box may extrapolate the probable viewer at the

particular time based on past viewing history. For example, the past viewing history may

indicate that the mother and/or father usually views the television at between 10 - 12

midnight while the children view the television from 3 - 8 pm. Thus, if the user is not

20   known, but the set-top box knows that it is currently 10 pm, it will conclude that the

mother and/or father are watching the television and therefore display the Custom Menu

for the mother or father. Thus, in this manner, the targeted advertising system may

generate and use a Custom Menu for each viewer in a household in order to individually

target advertisements to individual viewers in a household.

While the foregoing has been with reference to a particular embodiment of the

invention, it will be appreciated by those skilled in the art that changes in this embodiment

5   may be made without departing from the principles and spirit of the invention, the scope of

which is defined by the appended claims.

Claims:

1   1.   A system for providing programming and advertisements to a plurality of

2   viewers over a digital broadcast system, comprising:

3   a targeted advertising system comprising means for receiving one or more pieces

4   of advertising criteria from an advertiser for an advertising campaign, means for receiving

5   a plurality of programs including advertisement slot, means for selecting particular

6   advertisements for a particular advertisement slot of a program based on the advertising

7   criteria to generate a playbill, means for generating an advertisement identifier for each

8   advertisement indicating the targeting criteria which apply to the advertisement, and

9   means for generating one or more advertisement channels wherein each advertisement

10   channel contains a different advertisement for an advertisement slot on a program channel;

11

12   a head-end system comprising means for combining the programs, the

13   advertisement identifiers and the advertisement channels into a digital data stream and

14   means for broadcasting the digital data stream to a plurality of set-top boxes; and

15   each set-top box comprises means for receiving the digital datastream for the head-

16   end, means for receiving a bitstream containing the targeting criteria for the set-top box,

17   means for selecting a particular advertisement channel for a program channel being viewed

18   to select an advertisement to watch in a particular advertisement slot based on a

19   comparison of the bitstream and the advertisement identifier of the advertisement in the

20   advertisement channel so that a different advertisement may be selected by each set-top

21   box to be viewed in the particular advertisement slot.

1   2.   The system of Claim 1, wherein the bitstream comprises a plurality of bits,

2   wherein each bit corresponds to a particular targeting criteria.

1   3.   The system of Claim 2, wherein the advertisement identifier comprises a

2   plurality of bits, each bit corresponding to a particular targeting criteria and wherein said

3   advertisement channel selecting means comprises means for comparing each bit of the

4   bitstream to each bit of the advertisement identifier to select which advertisement channel

5   contains the advertisement with the closest targeting criteria to the set-top box.

1   4.   The system of Claim 1, wherein the bitstream comprises a group identifier,

2   said advertisement identifier comprises a advertisement group identifier and said

3   advertisement channel selecting means comprises means for comparing the group

4   identifier to the advertisement group identifier to select the advertisement channel

5   containing the advertisement.

1   5.   The system of Claim 1, wherein the advertisement identifier for a particular

2   program channel are broadcast over a particular frequency.

1   6.   The system of Claim 5 further comprising a plurality of program channels

2 wherein each program channel has a corresponding set of advertisement identifiers and

3 wherein the advertisement channels are shared by the plurality of program channels.

1   7.   The system of Claim 1, wherein the targeted advertising system comprises

2 a rules database containing rules for selecting a particular advertisement break based on

3 particular targeting criteria, a rule processor for processing each advertisement based on

4 the targeting criteria to generate an advertisement plan indicating the likelihood that an

5 advertisement will be associated with a particular program channel, a program database

6 containing data about the programs and corresponding advertisement breaks in the

7 programs, and a playbill generator for generating a playbill based on the advertisement

8 plan and the program database.

1   8.   The system of Claim 1, wherein the set-top box comprises means for

2 collecting a viewing history of the television set connected to the set-top, means for

3 determining a current viewer or viewers of the system, and means for selecting a particular

4 menu of programs based on the current viewer or viewers.

1   9.   The system of Claim 1, wherein the broadcast medium comprises terrestrial

2 cable.

1   10.   The system of Claim 1, wherein the broadcast medium comprises a satellite

2   based system.

1   11.   The system of Claim 1, wherein the broadcast medium comprises a wireless

2   broadcast system.

1   12.   A method for targeting advertisements to an individual viewer at a

2   particular time over a digital broadcast medium, comprising:

3   gathering information about the programming preferences and actual viewing

4   behavior of a user in a household;

5   generating a custom menu for the user based on the programming preferences and

6   actual viewing behavior, the custom menu indicating the particular user watching the

7   digital broadcast medium and the programs which are desirable for the particular user;

8   selecting, based on user input, a particular piece of programming to watch; and

9   selecting, during an advertisement slot in the particular piece of programming, a

10   particular advertisement for the particular user to view during the advertisement slot based

11   on the particular user identified by the custom menu.

1   13.   The method of Claim 12 further comprising receiving one or more streams

2   of advertisements, each stream of advertisements containing an advertisement and which

3   may be selected during the advertisement break based on an associated advertisement

4   identifier, receiving a bitstream containing the targeting criteria for the user, and wherein

5   the selecting comprises selecting a particular advertisement stream for a program being

6   viewed based on a comparison of the bitstream and the advertisement identifier of the

7   advertisements in the on or more advertisement streams.

1   14.   The method of Claim 13, wherein the bitstream comprises a plurality of

2   bits, wherein each bit corresponds to a particular targeting criteria.

1   15.   The method of Claim 14, wherein the advertisement identifier comprises a

2   plurality of bits, each bit corresponding to a particular targeting criteria and wherein said

3   advertisement stream selecting comprises comparing each bit of the bitstream to each bit

4   of the advertisement identifier to select which advertisement stream contains the

5   advertisement with the closest targeting criteria to the user.

1   16.   The method of Claim 13, wherein the bitstream comprises a group

2   identifier, said advertisement identifier comprises a advertisement group identifier and said

3   advertisement stream selecting comprises comparing the group identifier to the

4   advertisement group identifier to select the advertisement channel containing the

5   advertisement.

1   17.   The method of Claim 13, wherein the advertisement identifier for a

2   particular program channel are broadcast over a particular frequency.

1   18.   The method of Claim 17 further comprising a plurality of program channels

2   wherein each program channel has a corresponding set of advertisement identifiers and

3   wherein the advertisement channels are shared by the plurality of program channels.

1   19.   The method of Claim 13, further comprising predicting the identity of a

2   particular user in a household who is currently watching the digital broadcast medium and

3   wherein the selecting comprises selecting the particular advertisement based on the

4   predicted user.

1   20.   The method of Claim 19, wherein predicting the user further comprises

2   gathering information about the program switching behavior of the users in the household

3   to generate past switching behavior and comparing the current switching behavior of a

4   current user to the past switching behavior to predict the identity of the current user.

1   21.   The method of Claim 19, wherein predicting the user further comprises

2   gathering information about the history of when each user is watching the digital broadcast

3   medium to generate past viewing history for each user and comparing the time of the

4   viewing with the past viewing history to predict the identity of the current user.

1   22.   The method of Claim 12, wherein gathering the information comprises

2   gathering responses of the user to advertisements and programming being watched.

1   23.   The method of Claim 12, wherein gathering the information comprises

2   generating a questionnaire about the preferences of the user towards various programming

3   and advertisements, and gathering information from the questionnaire.

1   24.   The method of Claim 12, wherein gathering the information comprises

2   gathering information about the number of times that a user switches away from a

3   particular program or a particular advertisement.

1   25.   A cable head-end for providing programming and individualized

2   advertisements to a plurality of viewers over a digital broadcast system, the cable head-end

3   comprising:

4   means for receiving one or more pieces of advertising criteria from an advertiser

5   for an advertising campaign;

6   means for receiving a plurality of programs including advertisement breaks;

7   means for selecting particular advertisements for a particular advertisement break

8   of a program based on the advertising criteria to generate a playbill;

9   means for generating an advertisement identifier for each advertisement indicating

10   the targeting criteria which apply to the advertisement;

11   means for generating one or more advertisement channels wherein each

12   advertisement channel contains a different advertisement for an advertisement break;

13   means for combining the programs, the advertisement identifiers and the

14   advertisement channels into a digital data stream;

15   means for broadcasting the digital data stream to a plurality of set-top boxes;

16   means for broadcasting a bitstream to each set-top box containing the targeting

17   criteria for the set-top box and the viewer so that the set-top box may select a particular

18   advertisement channel for a program being viewed based on a comparison of the bitstream

19   and the advertisement identifier of the advertisement in the advertisement channel.

1   26.   The cable head-end of Claim 25, wherein the bitstream comprises a

2   plurality of bits, wherein each bit corresponds to a particular targeting criteria so that the

3   set-top box may select a particular advertisement channel by comparing each bit of the

4   bitstream to each bit of the advertisement identifier.

1   27.   The cable head-end of Claim 25, wherein the bitstream comprises a group

2   identifier, said advertisement identifier comprises a advertisement group identifier so that

3   the set-top box may select a particular advertisement channel by comparing the group

4   identifier to the advertisement group identifier.

1   28.   The cable head-end of Claim 25, wherein the advertisement identifier for a

2   particular program channel are broadcast over a particular frequency.

1   29.   The cable head-end of Claim 28 further comprising a plurality of program

2   channels wherein each program channel has a corresponding set of advertisement

3   identifiers and wherein the advertisement channels are shared by the plurality of program

4   channels.

1   30.   The cable head-end of Claim 25 further comprising a rules database

2   containing rules for selecting a particular advertisement break based on particular targeting

3   criteria, a rule processor for processing each advertisement based on the targeting criteria

4   to generate an advertisement plan indicating the likelihood that an advertisement will be

5   associated with a particular program channel, a program database containing data about

6   the programs and corresponding advertisement breaks in the programs, and a playbill

7   generator for generating a playbill based on the advertisement plan and the program

8   database.

1   31.   The cable head-end of Claim 25, wherein the broadcast medium comprises

2   terrestrial cable.

1   32.   The cable head-end of Claim 25, wherein the broadcast medium comprises

2   a satellite based system.

1   33.   The cable head-end of Claim 25, wherein the broadcast medium comprises

2   a wireless broadcast system.

1   34.   A set-top box device for providing programming and advertisements to a

2   viewer from a digital broadcast system, the set-top box comprising:

3   means for receiving the digital datastream for a head-end and a targeted advertising

4   system, the digital datastream comprising programming content with associated

5   advertisement breaks, and one or more advertisement channels wherein each

6   advertisement channel contains a different advertisement for an advertisement break, each

7   advertisement having an associated advertisement identifier;

8   means for receiving a bitstream from a cable head-end containing the targeting

9   criteria for the set-top box; and

10   means for selecting a particular advertisement channel for a program being viewed

11   based on a comparison of the bitstream and the advertisement identifier of the

12   advertisement in the advertisement channel.

1   35.   The set-top box of Claim 34, wherein the bitstream comprises a plurality of

2   bits, wherein each bit corresponds to a particular targeting criteria.

1   36.   The set-top box of Claim 35, wherein the advertisement identifier

2   comprises a plurality of bits, each bit corresponding to a particular targeting criteria and

3   wherein said advertisement channel selecting means comprises means for comparing each

4   bit of the bitstream to each bit of the advertisement identifier to select which advertisement

5   channel contains the advertisement with the closest targeting criteria to the set-top box.

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1   37.   The set-top box of Claim 34, wherein the bitstream comprises a group

2 identifier, said advertisement identifier comprises a advertisement group identifier and said

3 advertisement channel selecting means comprises means for comparing the group

4 identifier to the advertisement group identifier to select the advertisement channel

5 containing the advertisement.

1   38.   The set-top box of Claim 34 further comprising means for collecting a

2 viewing history of the digital broadcast medium, means for determining a current viewer

3 of the system, and means for selecting a particular menu of programs based on the current

4 viewer.

1   39.   The set-top box of Claim 34, wherein the broadcast medium comprises

2 terrestrial cable.

1   40.   The set-top box of Claim 34, wherein the broadcast medium comprises a

2 satellite based system.

1   41.   The set-top box of Claim 34, wherein the broadcast medium comprises a

2 wireless broadcast system.

1   42.   The set-top box of Claim 34 further comprising means for predicting the

2 identity of a particular user in a household who is currently watching the digital broadcast

3   medium, and wherein the selecting means comprises means for selecting the particular

4   advertisement based on the predicted user.

1   43.   The set-top box of Claim 42, wherein the predicting means further

2   comprises means for gathering information about the program switching behavior of the

3   users in the household to generate past switching behavior and means for comparing the

4   current switching behavior of a current user to the past switching behavior to predict the

5   identity of the current user.

1   44.   The set-top box of Claim 42, wherein the predicting means further

2   comprises means for gathering information about the history of when each user is

3   watching the digital broadcast medium to generate past viewing history for each user and

4   means for comparing the time of the viewing with the past viewing history to predict the

5   identity of the current user.

1   45.   The set-top box of Claim 34 further comprising means for gathering

2   responses of the user to advertisements and programming being watched.

1   46.   The set-top box of Claim 45, wherein the gathering means comprises means

2   for generating a questionnaire about the preferences of the user towards various

3   programming and advertisements, and means for gathering information from the

4   questionnaire.

1   47.   The set-top box of Claim 45, wherein the gathering means comprises

2   means for gathering information about the number of times that a user switches away from

3   a particular program or a particular advertisement.
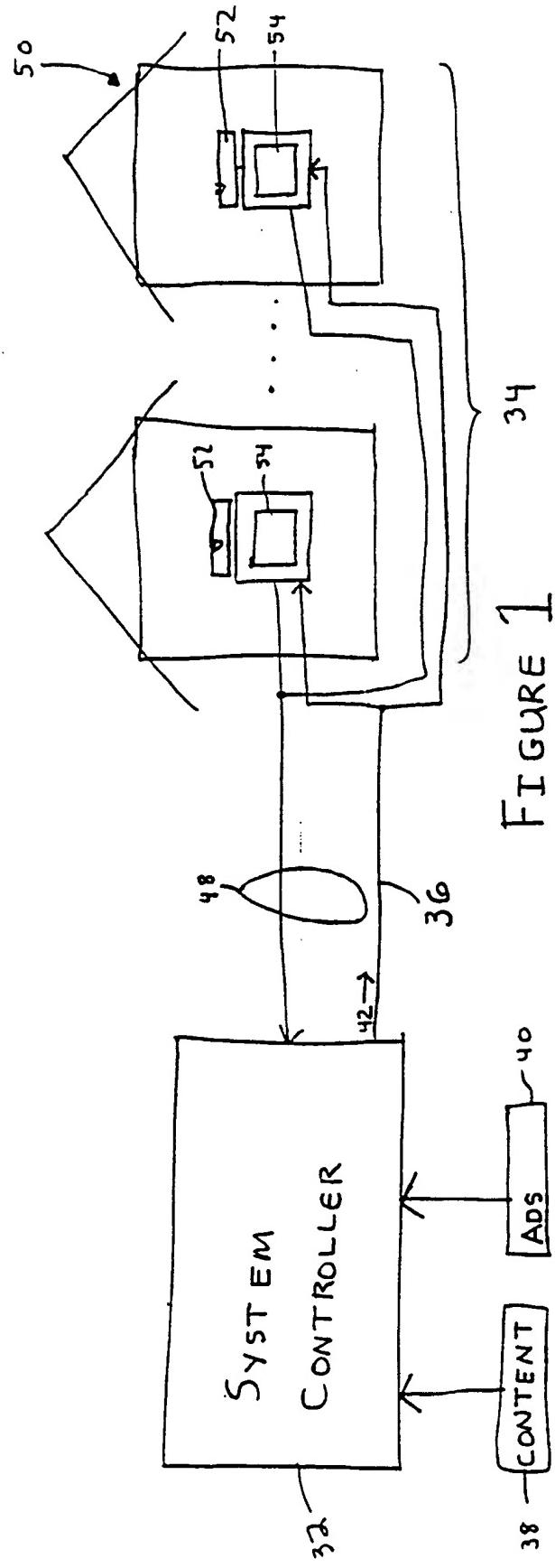
FIGURE 1
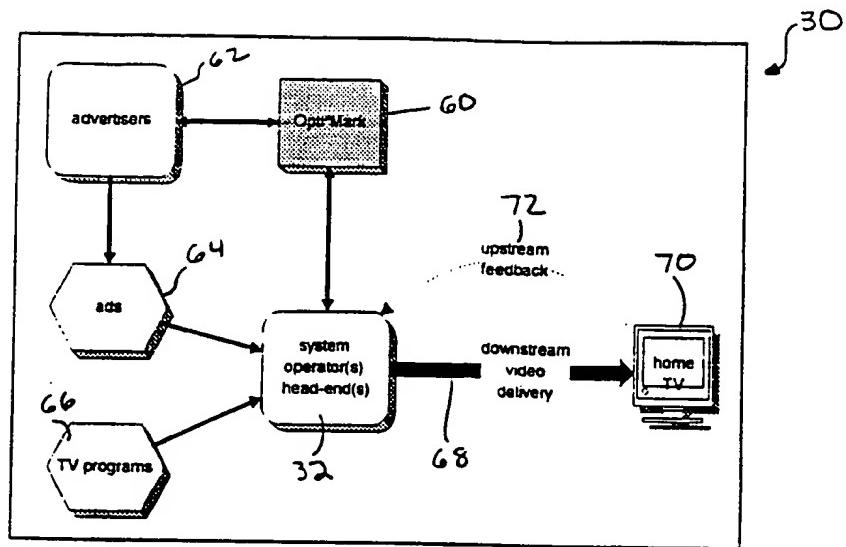
Figure 2
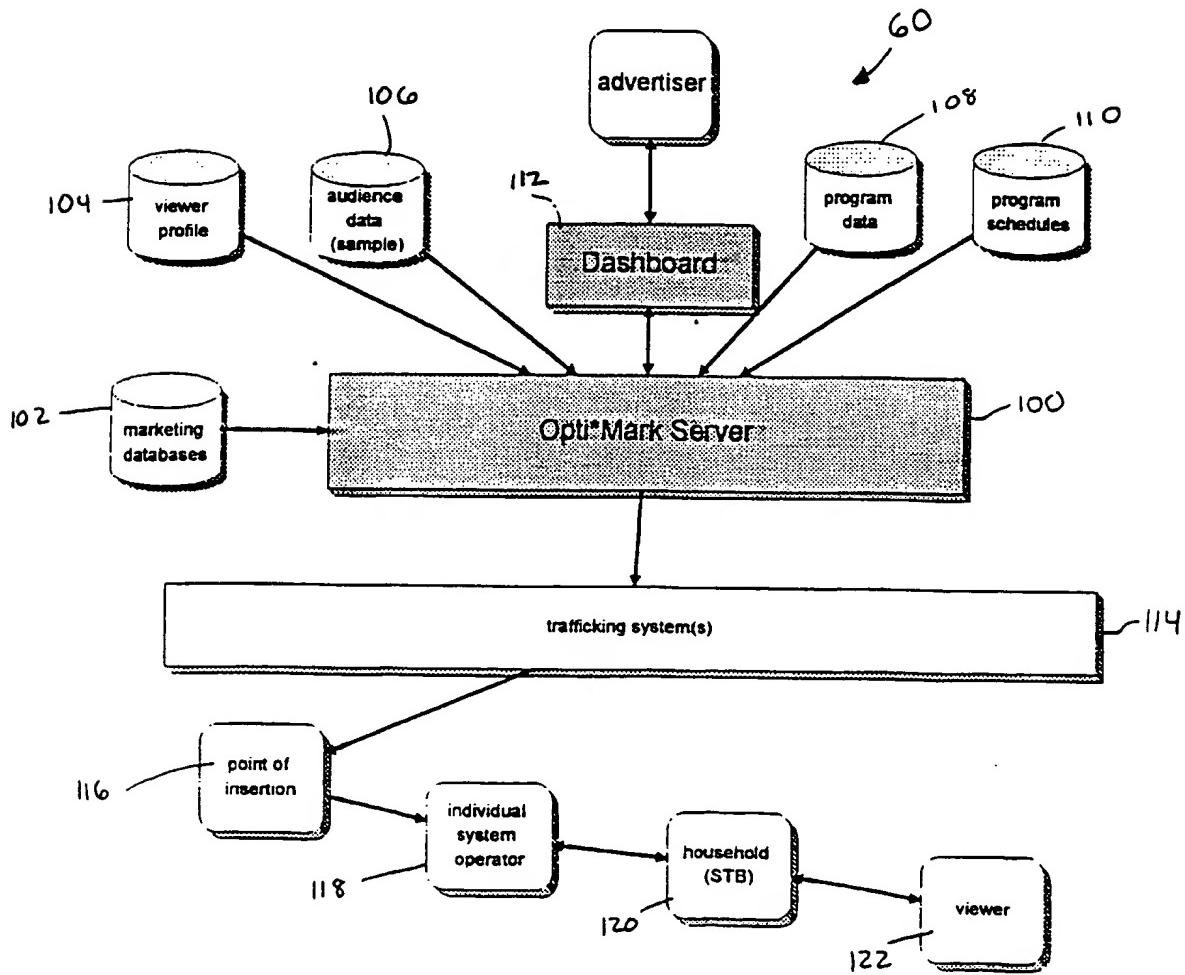
Figure 3
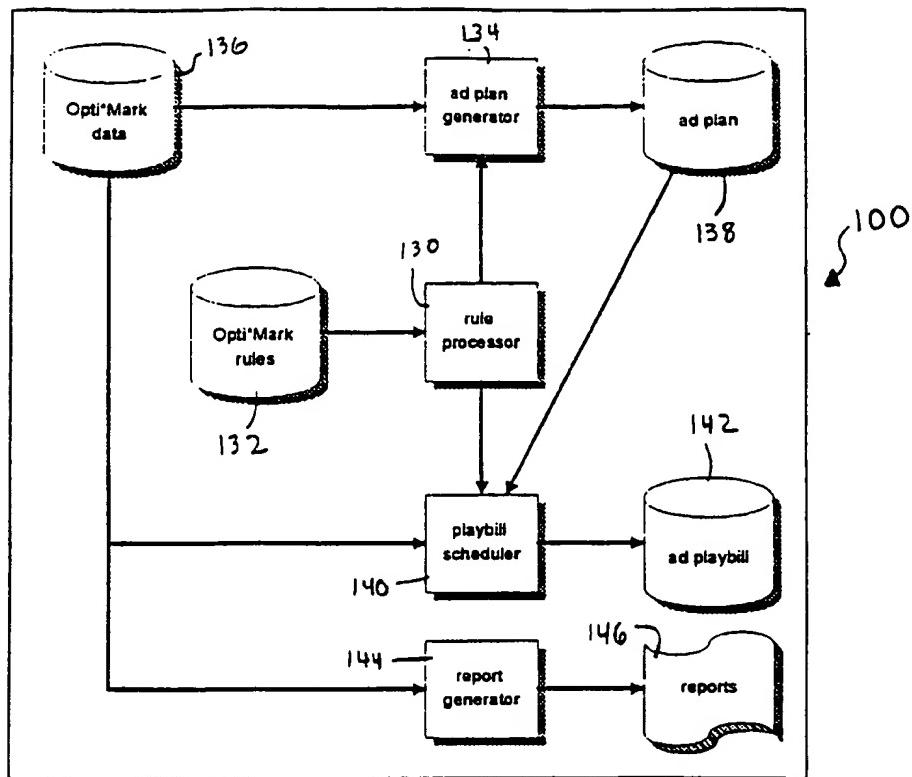
Figure 4
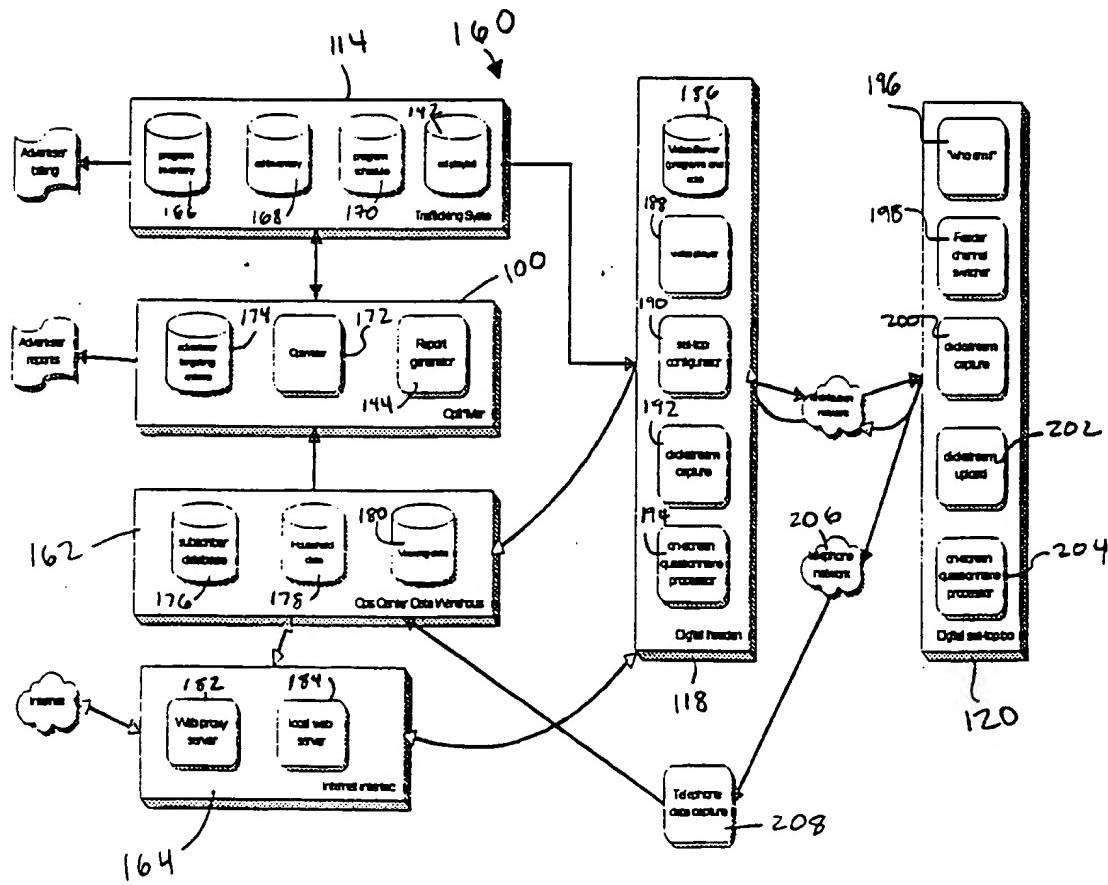
Channel	Program segment 1 (232)	Break 1 (234)	Program segment 2 (236)	Break 2 (238)
Control 1 (222)	f1=w1, w2, f2=w4, f3=w5		f1=w2, w3, f2=w5, f3=w4	
Program channel 1 (224)	program segment	ad break: ad 0..	program segment..............	ad break: ad 4..
Feeder channel 1 (226)	idle..................................	ad break: ad 1..	idle..................................	ad break: ad 5..
Feeder channel 2 (228)	idle..................................	ad break: ad 2..	idle..................................	ad break: ad 6..
Feeder channel 3 (230)	idle..................................	ad break: ad 3..	idle..................................	ad break: ad 7..

Figure 6

(220)

Channel	Program segment 1 (232)	Break 1 (234)	Program segment 2 (236)	Break 2 (238)
Control 1 (222)	p1=b0,f1=b2,f2=b3,f3=b4	.	p1=b5,f1=b7,f2=b8,f3=b9	
Program channel 1 (224)	program segment..............	ad break: ad 0....	program segment...............	ad break: ad 5......
Feeder channel 1 (226)	idle	ad break: ad 2...	idle	ad break: ad 7......
Feeder channel 2 (228)	idle	ad break: ad 3...	idle	ad break: ad 8......
Feeder channel 3 (230)	idle	ad break: ad 4...	idle	ad break: ad 9......

Figure 7

Channel	Program segment 1 (232)	Break 1 (234)	Program segment 2 (220) (236)	Break 2 (238)
Control 1 (222)	p1=b0, p2=b1, f1=b2, f2=b3, f3=b4		p1=b5, p2=b6, f1=b7, f2=b8, f3=b9	
Prog. channel 1 (224)	program segment	ad break: ad 0 ..	program segment...............	ad break: ad 5 ..
Control 2 (250)	p1=b0, p2=b1, f1=b2, f2=b3, f3=b4		p1=b5, p2=b6, f1=b7, f2=b8, f3=b9	
Prog. channel 2 (252)	program segment	ad break: ad 1 ..	program segment...............	ad break: ad 6 ..
Feeder channel 1 (226)	idle	ad break: ad 2 ..	idle....................................	ad break: ad 7 ..
Feeder channel 2 (228)	idle	ad break: ad 3 ..	idle....................................	ad break: ad 8 ..
Feeder channel 3 (230)	idle	ad break: ad 4 ..	idle....................................	ad break: ad 9 ..

Figure 8

Campaign Name	Series Name	Target Value	Impressions
Baby Shampoo	Discovery News	449	651
Baby Shampoo	World of Wonder	441	171
Club Med - Family	Discovery News	155	651
Club Med - Family	World of Wonder	153	171
Computer City	Discovery News	181	651
GM Saturn	Discovery News	449	651
GM Saturn	World of Wonder	441	171
Internet Phone	Discovery News	428	651
Internet Phone	World of Wonder	142	171
Master Card	Discovery News	100	651
Master Card	World of Wonder	106	171
Nail Varnish	Discovery News	784	651
Nail Varnish	World of Wonder	781	171
Nintendo	Discovery News	449	651
Nintendo	World of Wonder	441	171
Nissan Pathfinder	Discovery News	442	651
Nissan Pathfinder	World of Wonder	460	171
Phone Long Distance	Discovery News	138	651
Phone Long Distance	World of Wonder	144	171
Sony Playstation	Discovery News	692	651
Sony Playstation	World of Wonder	702	171
Travelling Alone	Discovery News	201	651
Travelling Alone	World of Wonder	248	171
VISA	Discovery News	115	651
VISA	World of Wonder	85	171

FIGURE 9

Playbill, Plan, by Channel and Day

master channel: C1

start time: 23:00:00   *show date:* Mar 8   *program:* Discovery News   *title:* Discovery News Fri 3/6/98   *1998-03-08 through 1998-03-10*

channel	break number	ISCI code	spot house number	spot title	spot duration	*program house number:* spot termination date
C-FC1	1	CS1	CompCity1	Computer City	30	1998-08-31
	1	IP1	WWWPh	Internet Phone	30	1998-08-31
	1	NI001	NI1	Nintendo	30	1998-08-31
	1	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	1	CM1	CIMed1	Club Med for Families	30	1998-08-31
C-FC2	1	GM001	GM1	New GM Saturn	30	1998-08-31
	1	CS1	CompCity1	Computer City	30	1998-08-31
	1	IP1	WWWPh	Internet Phone	30	1998-08-31
	1	VI002	VI2	VISA Abroad	20	1998-08-31
	1	NI001	NI1	Nintendo	30	1998-08-31
C-FC3	1	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	1	GM002	GM2	Visit cardealer for new Saturn	20	1998-08-31
	1	CS1	CompCity1	Computer City	30	1998-08-31
	1	IP1	WWWPh	Internet Phone	30	1998-08-31
	1	NI001	NI1	Nintendo	30	1998-08-31
	1	SY002	SY2	Sony Playstation Special Offer	15	1998-08-31
	1	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	1	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	1	LOGO05	logo5	logo 5 seconds	5	1999-12-30
C-FC4	1	GM001	GM1	New GM Saturn	30	1998-08-31
	1	MCD01	MC1	Master Card	30	1998-08-31
	1	CS1	CompCity1	Computer City	30	1998-08-31
	1	IP1	WWWPh	Internet Phone	30	1998-08-31
	1	NV1	Nail1	Nail Varnish	30	1998-08-31
C1	1	VI003	VI3	VISA Everywhere	15	1998-08-31
	1	CS1	CompCity1	Computer City	30	1998-08-31
	1	IP1	WWWPh	Internet Phone	30	1998-08-31
	1	CM1	CIMed1	Club Med for Families	30	1998-08-31
	1	NV1	Nail1	Nail Varnish	30	1998-08-31
	1	VI0032	VI3-2	VISA Everywhere	15	1998-08-31
C-FC1	2	CS1	CompCity1	Computer City	30	1998-08-31
	2	IP1	WWWPh	Internet Phone	30	1998-08-31

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FIGURE 10A

Playbill, Plan, by Channel and Day

master channel: C1   *show date:* Mar 8   program: Discovery News   *title:* Discovery News Fri 3/6/98

start time: 23:00:00

1998-03-08 through 1998-03-10

channel	break number	ISCI code	spot house number	spot title	spot duration	program house number: spot termination date
C-FC1	2	NS001	Nissan1	Nissan Pathfinder	30	1998-08-31
	2	CM1	CIMed1	Club Med for Families	30	1998-08-31
	2	SY002	SY2	Sony Playstation Special Offer	15	1998-08-31
C-FC2	2	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	2	CS1	CompCity1	Computer City	30	1998-08-31
	2	IP1	WWWPh	Internet Phone	30	1998-08-31
	2	CM1	CIMed1	Club Med for Families	30	1998-08-31
	2	0374-1	YC0374	48 Hours Later	30	1998-08-31
	2	LOGO05	logo5	logo 5 seconds	5	1999-12-30
C-FC3	2	GM002	GM2	Visit cardealer for new Saturn	20	1998-08-31
	2	CS1	CompCity1	Computer City	30	1998-08-31
	2	IP1	WWWPh	Internet Phone	30	1998-08-31
	2	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	2	SY002	SY2	Sony Playstation Special Offer	15	1998-08-31
	2	LOGO10	logo10	logo 10 seconds	10	1999-12-30
C-FC4	2	VI003	VI3	VISA Everywhere	15	1998-08-31
	2	CS1	CompCity1	Computer City	30	1998-08-31
	2	PL1	PhLong1	Phone Long Distance	30	1998-08-31
	2	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	2	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	2	LOGO05	logo5	logo 5 seconds	5	1999-12-30
	2	VI0032	VI3-2	VISA Everywhere	15	1998-08-31
C1	2	GM001	GM1	New GM Saturn	30	1998-08-31
	2	CS1	CompCity1	Computer City	30	1998-08-31
	2	IP1	WWWPh	Internet Phone	30	1998-08-31
	2	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	2	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	2	LOGO05	logo5	logo 5 seconds	5	1999-12-30
C-FC1	3	CS1	CompCity1	Computer City	30	1998-08-31
	3	IP1	WWWPh	Internet Phone	30	1998-08-31
	3	NS001	Nissan1	Nissan Pathfinder	30	1998-08-31
C-FC2	3	CS1	CompCity1	Computer City	30	1998-08-31

1998-06-25

FIGURE 10B

Playbill, Plan, by Channel and Day

master channel: C1   show date: Mar 8

start time: 23:00:00   program: Discovery News   title: Discovery News Fri 3/6/98

1998-03-08 through 1998-03-10   program house number:

channel	break number	ISCI code	spot house number	spot title	spot duration	spot termination date
C-FC2	3	IP1	WWWPh	Internet Phone	30	1998-08-31
C-FC3	3	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	3	CS1	CompCity1	Computer City	30	1998-08-31
	3	IP1	WWWPh	Internet Phone	30	1998-08-31
C-FC4	3	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	3	VI003	VI3	VISA Everywhere	15	1998-08-31
	3	CS1	CompCity1	Computer City	30	1998-08-31
	3	PL1	PhLong1	Phone Long Distance	30	1998-08-31
	3	VI0032	VI3-2	VISA Everywhere	15	1998-08-31
C1	3	CS1	CompCity1	Computer City	30	1998-08-31
	3	IP1	WWWPh	Internet Phone	30	1998-08-31
	3	NI001	NI1	Nintendo	30	1998-08-31

start time: 23:30:00   program: World of Wonder   title: World of Wonder Fri 3/6/98

program house number: 20667

channel	break number	ISCI code	spot house number	spot title	spot duration	spot termination date
C-FC1	1	GM001	GM1	New GM Saturn	30	1998-08-31
	1	SY002	SY2	Sony Playstation Special Offer	15	1998-08-31
	1	NI001	NI1	Nintendo	30	1998-08-31
	1	NV1	Nail1	Nail Varnish	30	1998-08-31
	1	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	1	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	1	LOGO05	logo5	logo 5 seconds	5	1999-12-30
	1	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	1	NI001	NI1	Nintendo	30	1998-08-31
C-FC2	1	SY002	SY2	Sony Playstation Special Offer	15	1998-08-31
	1	NS001	Nissan1	Nissan Pathfinder	30	1998-08-31
	1	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	1	0374-1	YC0374	48 Hours Later	30	1998-08-31
	1	LOGO05	logo5	logo 5 seconds	5	1999-12-30
C-FC3	1	VI003	VI3	VISA Everywhere	15	1998-08-31
	1	PL1	PhLong1	Phone Long Distance	30	1998-08-31
	1	NV1	Nail1	Nail Varnish	30	1998-08-31

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FIGURE 10C

Playbill, Plan, by Channel and Day

master channel: C1   show date: Mar 8   program: World of Wonder   title: World of Wonder Fri 3/6/98

1998-03-08 through 1998-03-10

program house number: 20667

start time: 23:30:00

channel	break number	ISCI code	spot house number	spot title	spot duration	spot termination date
C-FC3	1	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	1	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	1	VI0032	VI3-2	VISA Everywhere	15	1998-08-31
C-FC4	1	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	1	IP1	WWWPh	Internet Phone	30	1998-08-31
	1	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	1	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	1	LOGO30	logo30	logo 30 seconds	30	1999-12-30
C1	1	GM002	GM2	Visit cardealer for new Saturn	20	1998-08-31
	1	PL1	PhLong1	Phone Long Distance	30	1998-08-31
	1	C0374-1	YC0374	48 Hours Later	30	1998-08-31
	1	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	1	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	1	LOGO010	logo10	logo 10 seconds	10	1999-12-30
C-FC1	2	GM001	GM1	New GM Saturn	30	1998-08-31
	2	NI001	NI1	Nintendo	30	1998-08-31
	2	CM1	CIMed1	Club Med for Families	30	1998-08-31
C-FC2	2	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	2	LOGO010	logo10	logo 10 seconds	10	1999-12-30
	2	LOGO005	logo5	logo 5 seconds	5	1999-12-30
	2	LOGO010	logo10	logo 10 seconds	10	1999-12-30
	2	NS001	Nissan1	Nissan Pathfinder	30	1998-08-31
	2	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	2	NV1	Nail1	Nail Varnish	30	1998-08-31
	2	CM1	CIMed1	Club Med for Families	30	1998-08-31
C-FC3	2	LOGO005	logo5	logo 5 seconds	5	1999-12-30
	2	LOGO010	logo10	logo 10 seconds	10	1999-12-30
	2	MC001	MC1	Master Card	30	1998-08-31
	2	PL1	PhLong1	Phone Long Distance	30	1998-08-31
	2	NS001	Nissan1	Nissan Pathfinder	30	1998-08-31
	2	NI001	NI1	Nintendo	30	1998-08-31
	2	LOGO005	logo5	logo 5 seconds	5	1999-12-30

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FIGURE 10D

Playbill, Plan, by Channel and Day

master channel: C1

show date: Mar 8   program: World of Wonder   title: World of Wonder Fri 3/6/98

1998-03-08 through 1998-03-10   program house number: 20667

start time: 23:30:00

channel	break number	ISCI code	spot house number	spot title	spot duration	spot termination date
C-FC4	2	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	2	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	2	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	2	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	2	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	2	LOGO05	logo5	logo 5 seconds	5	1999-12-30
C1	2	TA1	TrAg1	Travelling Alone	30	1998-08-31
	2	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	2	SY002	SY2	Sony Playstation Special Offer	15	1998-08-31
	2	PL1	PhLong1	Phone Long Distance	30	1998-08-31
	2	CM1	ClMed1	Club Med for Families	30	1998-08-31
C-FC1	3	GM001	GM1	New GM Saturn	30	1998-08-31
	3	Sh1	BabySham1	Baby Shampoo	30	1998-08-31
	3	CM1	ClMed1	Club Med for Families	30	1998-08-31
C-FC2	3	NS001	Nissan1	Nissan Pathfinder	30	1998-08-31
	3	CM1	ClMed1	Club Med for Families	30	1998-08-31
	3	NI001	NI1	Nintendo	30	1998-08-31
C-FC3	3	MC001	MC1	Master Card	30	1998-08-31
	3	NS001	Nissan1	Nissan Pathfinder	30	1998-08-31
	3	NI001	NI1	Nintendo	30	1998-08-31
C-FC4	3	LOGO10	logo10	logo 10 seconds	10	1999-12-30
	3	SY002	SY2	Sony Playstation Special Offer	15	1998-08-31
	3	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	3	LOGO30	logo30	logo 30 seconds	30	1999-12-30
	3	LOGO05	logo5	logo 5 seconds	5	1999-12-30
C1	3	CM1	ClMed1	Club Med for Families	30	1998-08-31
	3	NI001	NI1	Nintendo	30	1998-08-31
	3	NV1	Nail1	Nail Varnish	30	1998-08-31

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FIGURE 10E

FIGURE 11

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/20597

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :H04N 3/185
US CL :348/327

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 348/327, 9, 10; 455/6.2, 6.3

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST, WEST: targeted advertising, playbill, head end, gigital data, set top box, selecting particular advertisement, predicted user, current user, switching behavior, questionnaire

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,515,098 A (CARLES) 07 MAY 1996, WHOLE DOCUMENT.	1-18,22,25-37,39-41,45,47
Y	US 5,774,170 A (HITE et al) 30 JUNE 1998, WHOLE DOCUMENT.	1-18,22,25-37,39-41,45,47
A ----	US 5,155,591 A (WACHOB) 13 OCTOBER 1992, WHOLE DOCUMENT.	1-47 ----
A ----	US 5,231,494 A (WACHOB) 27 JULY 1993, WHOLE DOCUMENT.	1-47 ----
A ----	US 5,585,865 A (AMANO et al) 17 DECEMBER 1996, WHOLE DOCUMENT.	1-47 ----

☐ Further documents are listed in the continuation of Box C.   ☐ See patent family annex.

Date of the actual completion of the international search	Date of mailing of the international search report
13 NOVEMBER 1999	**10 DEC 1999**
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer HABTE K. BAHGI Telephone No. (703) 308-8208

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